

STATE OF ILLINOIS
ILLINOIS COMMERCE COMMISSION

NORTH SHORE GAS COMPANY)	
)	
Proposed general increase in natural gas)	Dkt. 09-0166
rates (Tariffs filed on February 25, 2009))	
)	
)	
THE PEOPLES GAS LIGHT AND COKE)	Dkt. 09-0167
COMPANY)	
)	(Consol.)
Proposed general increase in natural gas)	
rates (Tariffs filed on February 25, 2009))	

DIRECT TESTIMONY OF EDWARD C. BODMER
ON BEHALF OF
THE CITIZENS UTILITY BOARD AND
THE CITY OF CHICAGO

CUB-CITY EXHIBIT 1.0

JUNE 10, 2009

**ICC DOCKET NOS. 09-0166/09-0167 (cons.)
DIRECT TESTIMONY OF EDWARD C. BODMER**

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1 **I. QUALIFICATIONS AND SUMMARY OF TESTIMONY**

2

3 **Q. What is your name and on whose behalf are you testifying?**

4 A. My name is Edward C. Bodmer. I am testifying on behalf of the Citizens Utility Board
5 (“CUB”) and the City of Chicago (“City”).

6

7 **Q. Have you testified previously on the issues you address in this proceeding?**

8 A. Yes. I have testified on finance and cost of capital issues before this and other regulatory
9 bodies.

10

11 **Q. Please summarize your educational background and professional experience with**
12 **regulatory and cost of capital issues.**

13 A. I received a B.S. degree in Finance with highest honors from the University of Illinois in
14 1979 and an M.B.A. degree with honors from the University of Chicago in 1986. My
15 regulatory experience began with my employment on the Accounting and Finance Staff of
16 the Illinois Commerce Commission (“Commission”). After several years in the banking
17 industry, I began work as an independent consultant. Over a period of some 20 years, my
18 consulting work has encompassed numerous assignments on regulatory issues. I have
19 testified before this Commission and other state and federal utility regulatory commissions
20 a number of times on cost of service and rate design issues. My recent work includes
21 submission of an Affidavit to the Federal Energy Regulatory Commission (“FERC”),
22 testimony before the Maine Public Service Commission, and preparation of market
23 analyses for the American Public Power Association. My resume and a listing of my
24 previous testimony are included in CUB-City Exhibit 1.1.

Q. What is the purpose of your testimony?

A. The chaotic period in the financial markets that began last summer, often referred to as the financial crisis, presents new and unfamiliar dangers that the Commission must recognize in establishing a fair rate of return. My testimony (a) identifies the most important of those perils and provides information on how they can be addressed, (b) provides context for the Commission's examination of the cost of equity analyses and recommendations presented in this case, and (c) offers quantitative validation for the corrective steps I recommend to take account of the lessons of the financial crisis.

Q. What are some of the new challenges for the Commission that you see presented by the current market environment?

A. First, given the recent events in financial markets and the knowledge gained from them, the Commission cannot reasonably rely to the same extent as in previous cases on models that rest on an assumption of efficiency in the financial markets that does not exist. Second, the rather chaotic state of the financial markets must not be used as a false basis for excessive return on equity ("ROE") recommendations. Third, new information and insights highlighted by the financial crisis offer the Commission an opportunity to set aside over-reliance on complex mathematics and to revisit fundamental financial principles that should drive its rate of return determination. I present several simple, empirical analyses that can assist the Commission in recognizing and understanding relevant changes in the markets, to avoid inappropriate responses to the new circumstances.

47 **Q. In regulatory proceedings, cost of equity witnesses often claim that they are trying to**
48 **find the “true” opportunity cost of capital that compensates investors for the risks**
49 **they take. How do you assess those claims?**

50 A. Unfortunately, in rate proceedings, the “true” cost of capital lies most often in the eye of
51 the expert witness. Finding the cost of capital involves estimating a number that is not
52 directly observable and measuring something that is nearly impossible to quantify -- risk.
53 Though regulators understandably try to avoid re-examining relevant financial theory in
54 every rate case, current circumstances require such a return to the basics. The regulator’s
55 task is made even more difficult when experts seek to advance recommendations that vary
56 significantly from objective indicia of the utility’s cost of capital.

57
58 The economic objective of the regulated company -- and of the financial community -- is to
59 maximize earnings. This means that utility companies develop testimony in which the
60 estimated cost of capital generally exceeds its true cost of capital, which is the minimum
61 return necessary to compensate investors for taking risk. Other parties may advance an
62 opposing objective, even if they are constrained by the need to have a viable utility service
63 provider. Taking a slightly different approach, regulatory commission expert witnesses
64 make recommendations that are guided as much by the recent awards of their commission
65 as by objective analyses. Even regulators can be affected by factors other than objective
66 analyses. If a regulatory commission’s approved return level is deemed too low by the
67 financial community – which strongly favors high returns, the commission is likely to hear
68 that it has a negative rating or that its state is not friendly to investors.

70 Given the current economic hardships faced by consumers and the volatility in financial
71 markets experienced by investors, it is more important than ever for the Commission to
72 look through biases inherent in cost of capital investigations and set the return on equity to
73 the real cost of capital. For example, it is no longer good enough just to pick one party's
74 number (usually Staff's) because it is between those of the other interested parties. Instead,
75 the current economic climate requires investigation into details that underlie each cost of
76 capital analysis.

77
78 **Q. What was your initial reaction to hearing about the request of The Peoples Gas Light**
79 **and Coke Company ("Peoples Gas") for a 12% cost of equity?**

80 A. I was struck by the disparity between a utility's low risk and the premium implicit in the
81 requested 12% cost of equity. Peoples Gas submitted its testimony in February 2009 when
82 the yield on ten-Year Treasury Bonds, a low risk investment compared to most equity
83 securities and even debt instruments, was hovering between 2.75% and 3%. This means
84 that with a straight face, People Gas is suggesting that a the utility, which also has little risk
85 (by virtue of a statutory earnings opportunity, its delivery service monopoly, a stable
86 customer base, and a revenue decoupling mechanism) somehow should be entitled to earn a
87 premium of 9% over government bonds. It is not necessary to prepare sophisticated
88 financial analyses to see that this premium is out of proportion to the minimal incremental
89 risk associated with a local gas distribution company.¹

¹ My observations in this testimony apply equally to North Shore Gas Company ("North Shore"), which also is requesting a 12% cost of equity and operates in the same market environment as Peoples Gas.

Q. What does a 9% premium, relative to the yield on treasury bonds, mean for an investor?

A. To illustrate what a 9% premium means, let's consider two hypothetical investments. Assume that the holding company that owns Peoples Gas' shares is looking at two investments: one is a government bond; the other is an investment in a piece of pipe. Assume further that both investments require Integrys to take \$100 out of its pocket today. If the government bond earned a yield of 3% each year and Peoples Gas re-invested the interest proceeds in new bonds also yielding 3%, the \$100 investment would grow to \$235 in thirty years, as shown on the graph below. On the other hand, if the \$100 investment in a piece of pipe earned a return of 12% that was re-invested in more pipe, Integrys would ultimately receive a whopping \$2,675 in thirty years.

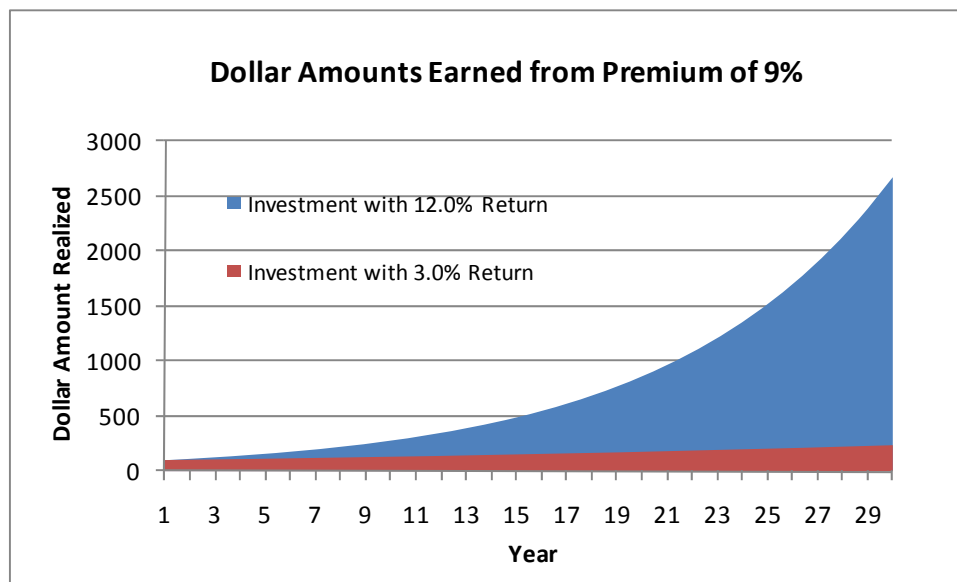


Figure 1

106 While the Commission, of course, has a responsibility to examine the cost of capital issue
107 in much more detail than a graph like this, at the end of this case, after sifting through
108 technical jargon and mathematical formulas, it must determine whether recommended
109 return levels fairly compensate investors for taking risk. My testimony will demonstrate
110 (a) that Peoples Gas is not entitled to a 9% premium and (b) that a 12% cost of equity
111 estimate is not at all consistent with either current market realities or the most basic
112 principles of finance.

113
114 **Q. Does the financial crisis provide the Commission and the Staff an opportunity to**
115 **revisit some of these basic principles that are used to compute rates of return?**

116 A. Absolutely. In fact, the current crisis actually requires the Commission to return to the
117 basics, rather than to repeat past approaches that take no account of, or are inconsistent
118 with, very different prevailing market circumstances. The financial crisis has shown that
119 many financial professionals need to go back to harbor and take a hard look at everything
120 from models that supposedly measure cost of capital to the basic question of what
121 constitutes risk. A number of theories, models, and financial strategies relevant to
122 traditional regulatory cost of equity determinations have proven to be erroneous during this
123 financial crisis. There is nothing wrong with admitting that past approaches are not
124 adequate to the challenges of the current environment and examining the pertinent risk and
125 financial issues using approaches more attuned to the undeniable changes in the markets.
126 Conversely, blind adherence to financial theories and models that do not work when
127 fundamental assumptions are upset should not be acceptable to the Commission.

129 **Q. Have you examined the assumptions underlying the customary rate case approaches**
130 **to the cost of equity question in light of the recent market upheaval?**

131 A. Yes, I have looked specifically at several market factors during this financial crisis,
132 including the abrupt changes in market valuations, the distinct behavior of utility
133 investments as the market turned downward, the logic of earnings forecasts made by stock
134 analysts, certain discrepancies in published financial data, and the behavior of credit
135 spreads on corporate and utility bonds.

136
137 **Q. Are there lessons regulators can learn from examining such factors in the context of**
138 **the financial crisis that are relevant to its cost of equity determination in this case?**

139 A. Yes, I am convinced that such an examination is both useful and necessary. Some of the
140 things that have happened since Peoples Gas received its last rate increase in September
141 2008, which was just before the bankruptcy of Lehman Brothers and the dramatic decline
142 in equity valuations, have a direct bearing on the cost of equity issues in this case. The
143 relevant market changes include a fall in stock prices (as measured by the S&P 500) of
144 more than 50% (from its high in the fall of 2007 to its low in March 2009). Over the same
145 period, many regulated utility companies have had much smaller stock price declines or
146 have even had stock price increases. At the same time, investor demand for shares of low
147 risk companies such as utilities has increased and yields on ten-year Treasury Bonds have
148 been below 3% for most the year.

149
150 In this financial crisis, some commonly used financial theories and approaches have not
151 provided meaningful help in understanding the new circumstances. Today, financial
152 analysts, professors, or consultants who offer confusing non-transparent quantitative

analyses with unnecessary complexity are scoffed at, rather than being thought of as smarter than the rest of us. Earnings forecasts made by sell-side analysts who pushed stock prices to very high levels before the crisis have earned about as much credence as fortune-telling. The current crisis has revealed more clearly than ever before that financial information from rating agencies and other financial industry sources (like Value Line) can be dramatically wrong and strongly biased. (For instance, Lehman Brothers had an “A” bond rating, just before it became the largest bankruptcy in history.) In this environment, investors are searching for investments that are safe and have inflation protections. Finally, preferred regulatory tools like the Capital Asset Pricing Model (“CAPM”) and the Discounted Cash Flow Model (“DCF”) have not been relevant in experts’ attempts to explain recent market behavior.

Q. Does the testimony of Peoples Gas’ cost of capital witness account for changes caused by the financial crisis in his pre-filed testimony?

A. No. Mr. Moul’s testimony and analysis contains several elements of types that are no longer appropriate in light of current circumstances and the lessons learned from the financial crisis. His recommendations are based on (a) analyses that are overly complex and not logical, (b) inputs that have been discredited, and (c) model results that are disconnected from easily checked fundamental objectives of determining a fair return on equity.

The financial crisis has shown that confusing explanations of financial products (for example, collateralized debt obligations and associated derivatives that are now termed toxic assets) and of underlying analyses were harmful to investors and to the national and

177 world economies. If a financial concept cannot be stated in a relatively simple and intuitive
178 manner, we now know it warrants very close scrutiny.

179
180 Mr. Moul's testimony does little to explain the concepts, the judgments, the choices, and
181 the qualitative imprecision that went into his calculations for adjustments to his DCF
182 calculation, his adjustment to beta, or his adjustment for firm size. Instead, he offers
183 complex computations using illogical inputs to arrive at his recommended cost of equity
184 estimate. In the same vein, Mr. Moul does not test the basic logic of three key variables in
185 his analyses, the growth rate in the DCF model, the growth rate used to derive the return
186 expected by the overall market, and the risk premium in the CAPM. The limitations, as
187 well as the usefulness, of such models must be taken into account. Equally important,
188 those caveats must be candidly disclosed in any meaningful explanation of why the results
189 make sense. After the experience of the financial crisis, there is little excuse for finance
190 professionals presenting incomplete or confusing financial information and
191 recommendations.

192
193 **Q. You mentioned the use of discredited data inputs as a problem. Did you find any**
194 **instances where such inputs were used in Mr. Moul's analyses?**

195 **A.** Even though it is now clear that rating agencies and financial sources like Value Line often
196 provide inaccurate or biased information, Mr. Moul uses inputs from those sources
197 extensively in his analyses, without independent evaluation. Prominent examples are the
198 absence of an independent assessment of the Value Line betas used in his CAPM analysis
199 and his acceptance of analyst earnings growth rates that are not sustainable.

201 There are alternatives to the typical “pre-crisis” presentations that were made in regulatory
202 proceedings. For example, experts and regulators should assure that growth rate forecasts
203 do not implicitly incorporate the illogical assumption that the equity return earned by a
204 utility can persist indefinitely at a level higher than its cost of equity, when that company is
205 supposed to have its prices determined by rate of return regulation. Second, regulators
206 should examine closely the returns on regulated company shares relative to the overall
207 market during the largest market decline in generations, as a check on beta inputs that
208 artificially boost cost of equity recommendations.

209
210 A firm’s beta is supposed to measure the change in its stock price relative to the overall
211 change in the market. When the market declines by 52% (which has happened during the
212 financial crisis), the beta Mr. Moul uses in his analyses (.82) suggests that the price of
213 regulated utility shares should decline by 43% (.82 x 52%). The actual stock price decline
214 for his sample of companies (which is somewhat biased) was only about 5% over the same
215 period. That performance, what happens to their shares when the world is turned on its
216 head, is what investors care about, not some theoretical statistical number. Regulators must
217 use logical, common sense tests like this when examining statistical adjustments that
218 purport to quantify risk, rather than simply accepting model results.

219
220 **Q. The estimation models (and some of the inputs) that you criticize have been regularly**
221 **used by this Commission in its past determinations. Are you saying that these**
222 **approaches cannot be used any longer?**

223 A. Not necessarily. What I am recommending is that the Commission use more caution,
224 greater scrutiny, and firmer transparency requirements when evaluating recommendations

derived from data and models whose significant defects and limitations have recently been revealed more clearly than ever before. Moreover, while some of these deficiencies have always been present, more attention is warranted now because, in the current market environment, they can produce greater distortions.

Q. In your opinion, what are the most important lessons that the Commission should take away from financial market events that have occurred over the past year?

A. The remainder of my testimony focuses on a more quantitative discussion of what I believe to be the four most important “big picture” items that the Commission should scrutinize in this, and subsequent, cases. Based on my examination of those four items in the following discussion, I recommend that the Commission require that cost of equity analyses utilize: (1) unbiased beta estimates that account for the relative movement of regulated shares compared to the overall market in the financial crisis; (2) sustainable growth rates that do not assume regulated companies can earn returns higher than their cost of capital indefinitely; (3) analysis of credit spreads on bonds that is not distorted by anomalies in current financial markets; and (4) a system of verification checks for cost of capital estimates.

II. BETAS

Q. What is the problem you see with the beta factors used in cost of equity analyses?

A. The CAPM requires, as an input, a single measure of the risk of a company, which the CAPM defines as the company’s beta. All risk of the particular company is crammed into this single statistic. In CAPM analyses today, that estimate of risk (relative to the market as a whole) must account for how stock valuations have changed in one of the most

dramatic financial events of the past century. In past cases, the Commission has sometimes accepted beta estimates (from Value Line) that imply that the risk of a regulated distribution company is not much less than the risk of the market in general. The behavior of investors and of utility share prices in the current crisis demonstrate – in a way that theoretical discussions could not – that those risk measures are biased and deserve no credibility. In the prevailing crisis conditions, utility shares have been a safe haven for investors, while share values in the overall market have plummeted dramatically. The real definition of risk – what happens to your investment when the world falls apart – demonstrates that the risk measure of regulated utility companies must be much lower than those of other companies that do not have the safety net of the regulatory regime.

Q. What has the financial crisis shown about the way CAPM defines risk?

A. The CAPM defines risk as the standard deviation of returns on a firm's stock. The CAPM incorporates a factor to account for this risk – the firm's beta, which is meant to capture a firm's risks that are relevant to its valuation. If you were to ask most people on the street to give a definition of risk, few would give you an answer anything like this. A better definition of risk, especially after the financial crisis, is the simple question of what will happen to an investment when things do not go as planned, *e.g.*, when something like the current financial crisis occurs. In this financial crisis, we have found that risk cannot be boiled down to a mathematical formula. That was a fatal flaw in the financial modeling of collateralized debt obligations.

Q. You mentioned Value Line in your remarks on the unreliability and bias of financial data. Can you explain what problems you find in the Value Line data?

A. Yes. My reading of the Value Line publications suggests that Value Line is generally supportive of higher rate increases, which it calls “rate relief,” and that Value Line betas are significantly higher than comparable reported data. The dramatic difference between betas for Mr. Moul’s sample companies reported by Value Line and corresponding betas reported by Yahoo.finance and the Google finance website is shown in Table 3 below.

Table 1 - Alternative Beta Estimates				
	Value Line	Yahoo	Google	
ATG	0.75	0.45	0.43	
ATO	0.65	0.51	0.51	
LG	0.65	-0.05	0.09	
NJR	0.70	0.11	0.16	
GAS	0.70	0.33	0.37	
NWN	0.60	0.25	0.29	
PNY	0.70	0.19	0.24	
SJI	0.75	0.23	0.23	
WGL	0.75	0.10	0.21	
Median	0.70	0.23	0.24	
Average	0.69	0.24	0.28	

Without understanding any fancy statistical analysis, the validity of the Value Line betas can be tested. If the Value Line betas were correct, market share values falling by 50% would mean that utility shares should fall by 35%. This is simply the beta of .7 from the table above multiplied by the 50% movement in the market. In fact, as I show below, the decline in utility shares for Mr. Moul’s sample was less than 6% when the market fell by 52%. And, that 6% includes companies such as NICOR that experienced declines because of non-utility operations such as shipping, which is very sensitive to overall economic conditions. Even worse, Mr. Moul increases the already suspect Value Line beta to .82, using a leverage adjustment that contains the type of illogical complexities that should no

longer be taken seriously. The key point about Mr. Moul's analysis is that he would predict a 41% decline in utility shares when the actual decline was 6%. That is all the comparative analysis that is necessary to conclude that such analyses are not a credible basis for a regulator's cost of equity determination.

The financial crisis has been depressing for many of us, and for most of Peoples Gas' ratepayers. One good thing about the financial crisis, however, is that it has shown us what risk really means. It does not involve making complicated statistical analyses with mean reversion factors and incomprehensible adjustments. Instead, we can get much more information from just looking at what happened to equity values. Continuing to rely on Value Line betas is analogous to the blind reliance on unverified information published by rating agencies that caused so many problems during the financial crisis. There were many instances of "safe" investments pronounced "AAA" by rating agencies that were lost. No cost of equity expert (and no regulator) should rely on data that has not been independently evaluated or rigorously calculated.

Q. Is there a simple example that illustrates how Value Line betas have not accurately measured risk?

A. Yes. An examination of certain comparative market data, namely the beta and stock price performance for different firms, shows how reported Value Line betas do not capture firms' actual risk differences. According to Value Line Investment Services, WGL (a very safe utility company) has a beta of 0.75. General Electric (GE), a multiple industry company with volatile stock prices subject to all sorts of risks, has a Value Line beta of 1.00 – that is, its risk is virtually the same as that of the entire market.

To see what the Value Line betas mean, consider that the typical risk premium used in investment analysis by investment bankers is about 4.5%. With a market premium of 4.5% commonly used by investment banks, the Value Line betas imply that the difference in the risks of a GE investment and a WGL investment would demand a premium for investing in GE of only 1.13% (4.5% multiplied by 1.00 minus 0.75). When one looks at stock prices of WGL and GE (illustrated in Figure 2 below) one can see how absurd this risk premium is. GE's stock price fell from \$37 to \$8, from the top to the bottom of the market (a decline of 77%). Over the same period, WGL fell from \$31.74 to \$30.01 (a decline of 5%). I cannot imagine anybody suggesting that a 1.13% difference in return really captures GE's greater risk – or, conversely, the greater safety of the WGL investment. From observing what happened during the financial crisis, it is apparent that the Value Line beta underestimated the risk of GE and that it overestimated the risk of WGL.

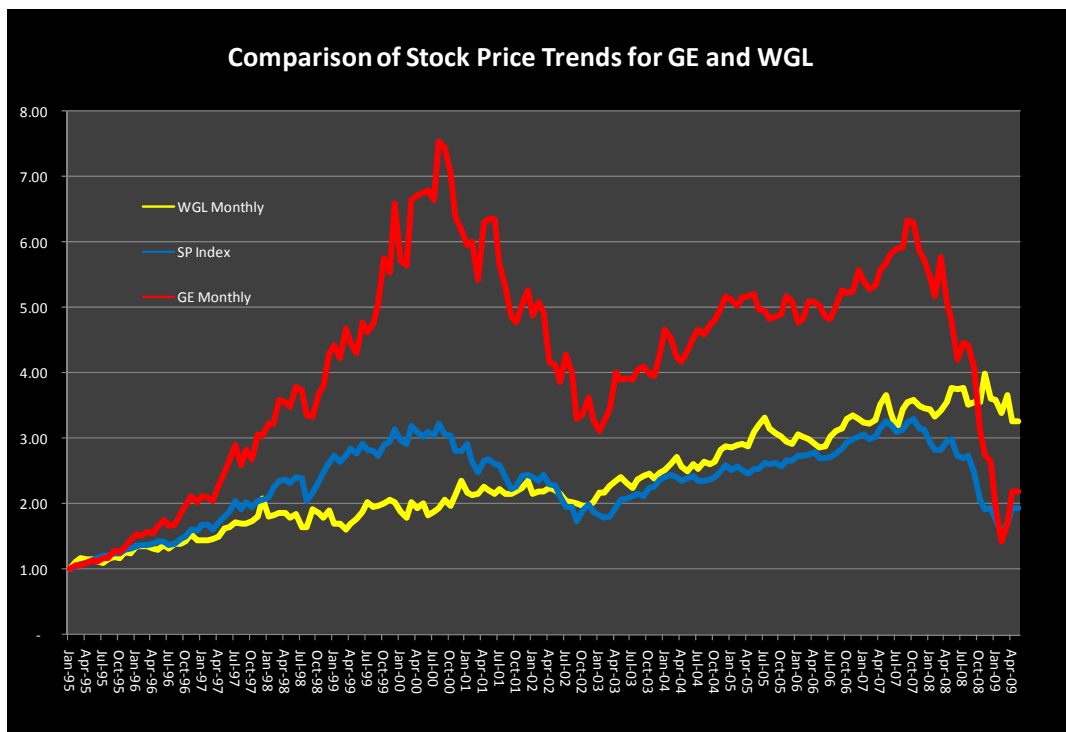


Figure 2

Q. What does an examination of the corresponding data for the remaining companies in Mr. Moul's sample demonstrate about the risk of utility companies?

A. It demonstrates the low risk nature of regulated utility companies. To make the evaluation I downloaded stock prices for each of the companies from the finance.yahoo.com website, which adjusts for dividend payments and stock splits. Table 2 below summarizes my stock price analysis, which is explained below by examining the stock price trends of each separate company. The table shows that over the period that matters most – the peak of the market to the trough of the market –the decline in the value of sample company stocks (excluding NICOR, which has shipping assets) has only been 4%. This compares to the decline in the overall market of 53%.

Table 2: Percent Changes in Stock Values in the Financial Crisis				
Ticker	Company Name	Non-Utility Percent	August 08 to May 09	Oct 07 to March 08
NWN	Northwest Natural Gas	5%	-15%	-11%
WGL	WGL Holdings	5%	-4%	-5%
ATO	Atmos Energy Group	5%	-18%	-24%
PNY	Piedmont Natural Gas	7%	-15%	-1%
LG	Laclede Group	33%	-10%	19%
NJR	New Jersey Resources	42%	-1%	11%
AGL	AGL Resources	44%	-14%	-16%
SJI	South Jersey Industries	45%	3%	0%
GAS	NICOR	34%	-30%	-23%
Average without NICOR		23%	-9%	-4%
Average with NICOR		24%	-12%	-6%
S&P 500			-43%	-53%
Implied Beta without NICOR			0.22	0.07
Implied Beta with NICOR			0.27	0.11

From the changes in stock values relative to the market, one can compute the beta for the isolated period of the crisis. This shows that for the time that really defines risk for investors – when things go badly – the beta of utility stocks (without NICOR) is 0.07 (seven hundredths) rather than Mr. Moul’s estimate of 0.82 (eighty-two hundredths). This is a dramatic difference.

Q. What else does Table 2 show about the stock price behavior of the companies in Mr. Moul’s sample?

A. Table 2 is more easily understood if one looks at the firms’ stock price behavior in a larger context, specifically, at what has happened to their stock prices (compared to the overall market) in the stock market crashes of both 2000-2001 and 2008-2009. Working through every single one of the companies in the sample is tedious, as many patterns tell the same story. Therefore, I have picked three of the companies to illustrate the points. For the sake of completeness, CUB-City Exhibit 1.2 contains a similar graph for each company in Mr. Moul’s sample not presented below.

Figure 3 shows stock price trends of Atmos Energy (ticker symbol ATO). The graph, which begins in 1995, compares an index of the adjusted stock price for ATO with an index of the S&P 500. The graph also shows the beta on the title – a number that is very easy to compute these days once adjusted stock prices are downloaded.

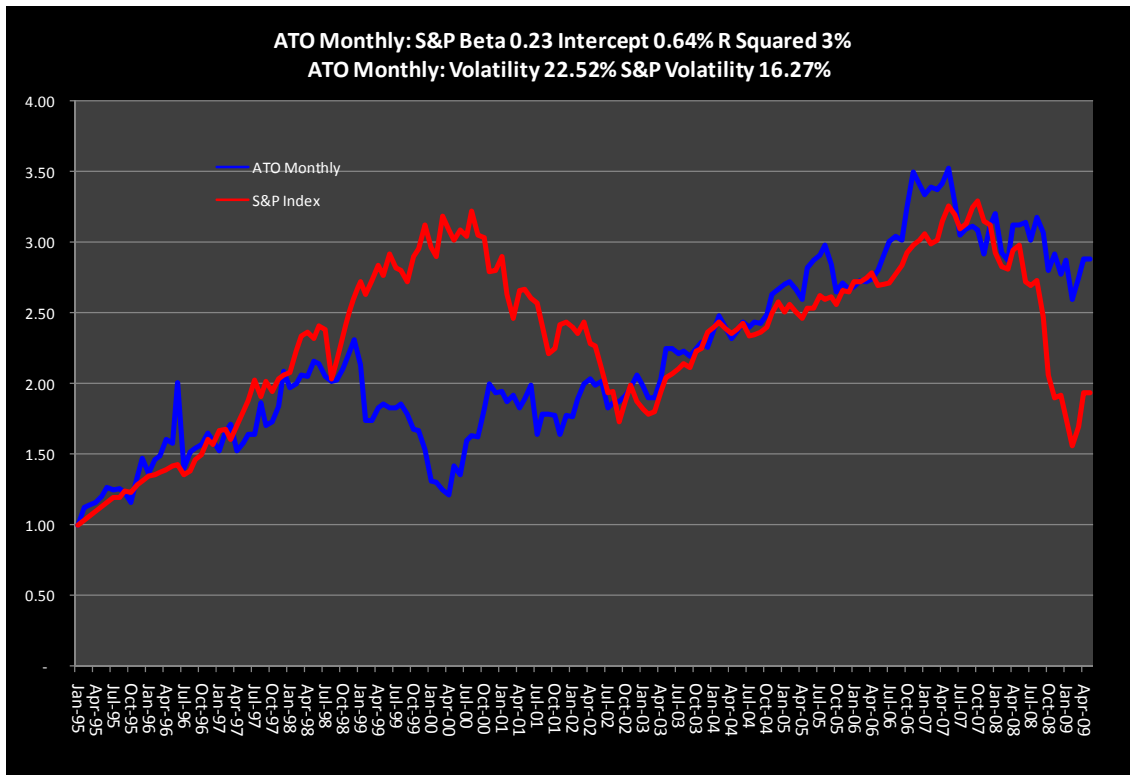


Figure 3

Atmos Energy demonstrates the general notion of risk for a utility company relative to investment in other stocks that do not have the protection of regulation. In looking at these charts, it is best to begin at the right and move to the left. When the market crashed in September 2008, ATO – the utility, the blue (darker) line on the graphs -- experienced a relatively minor decline. Relative to pre-crisis levels in August 2008, the ATO adjusted price lost about 18% of its value – its adjusted stock price was \$24.41 in August 2008 and it fell to \$21.54 in May 2009. On the other hand the S&P 500 had an index value of 1,283 in August 2008 and it had a value of 735 in May 2009.

If one moves to the left on the chart, one can see further evidence of the low risk of regulated utilities. After the year 2001 with low interest rates, the utility shares increased

along with the market. On the other hand, during the pre-2000 technology bubble, the ATO utility share declined in value while other stocks were increasing. When the stock market plunged then, ATO was flat.

Figure 4 shows stock price trends of Piedmont Natural Gas. The adjusted stock price for this company has shown consistent increases and has had a recent price spike followed by a sharp decline.

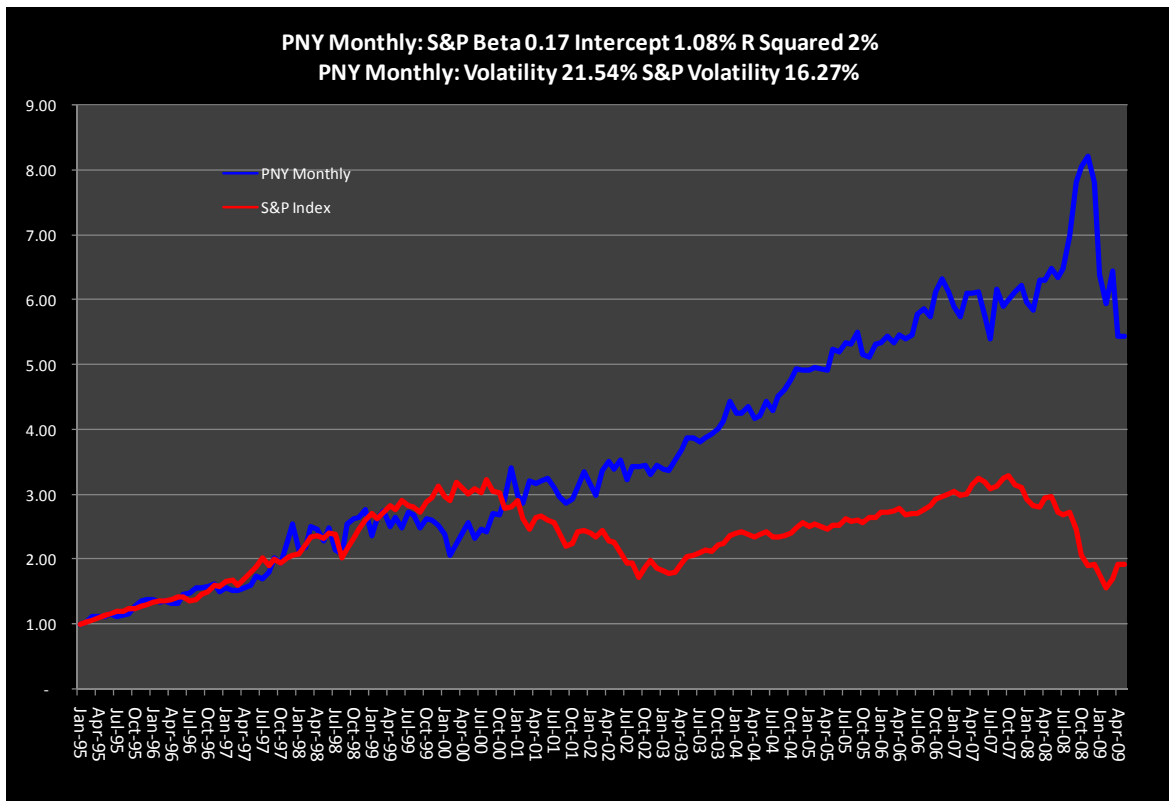


Figure 4

Working again from the right to the left for Piedmont Natural Gas (PNY), demonstrates how some utility shares provided a refuge for investors during the extreme market declines

in October and November of 2008 as PNY increased when the market crashed. As the market stabilized, the PNY stock price fell back to prior levels. Without the spike caused by investors seeking safe stocks, the value of PNY is about the same as it was at the height of the stock market. As one moves to the left, PNY's price behavior is similar to ATO's, in that when the overall stock market declined in 2001 the value of PNY increased along with the interest rates.

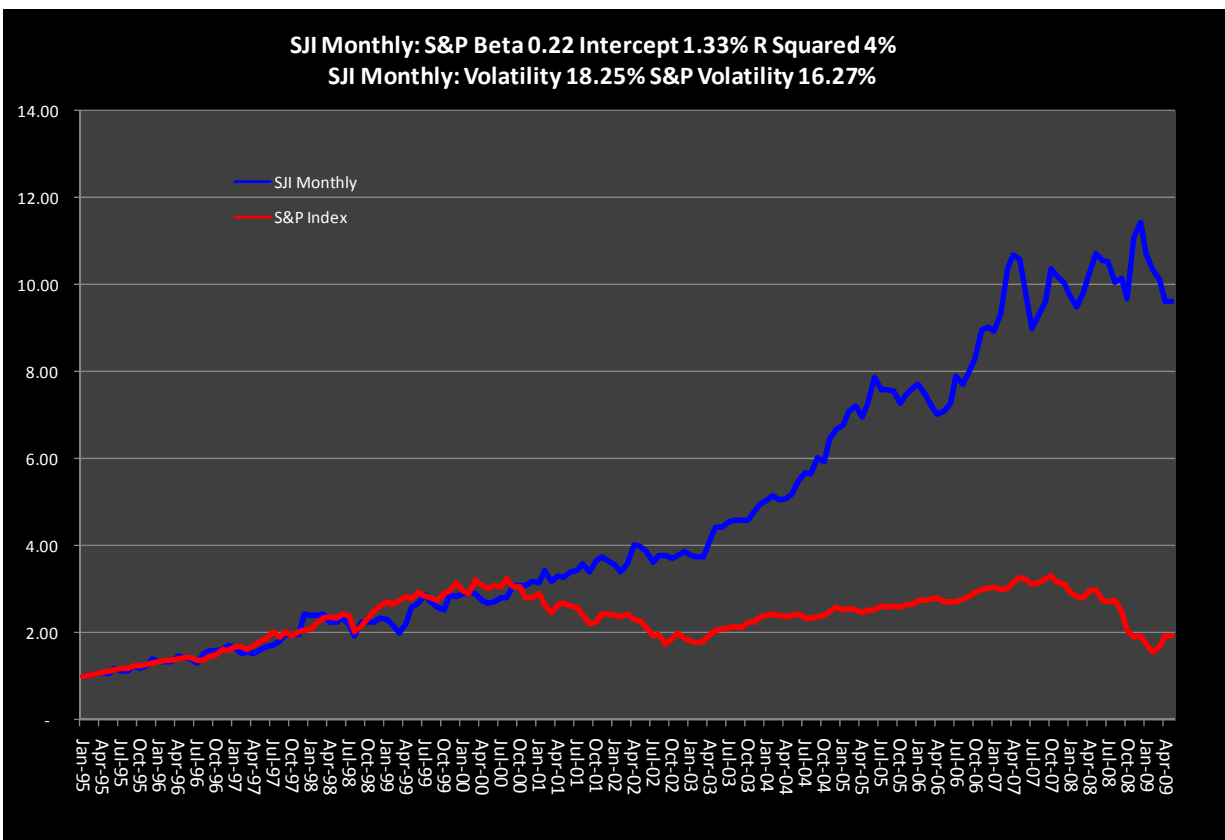


Figure 5

South Jersey Industries (SJI) shown in Figure 5 above has had a sustained increase in its stock price. SJI has profited from its gas marketing operations, which allowed it to achieve a return of more than 16% in 2006. These returns, which were clearly higher than SJI's

cost of capital, allowed it to realize the value increase. Importantly, even though the company earned high returns, it did not experience the decline during either of the two market crashes, as most of its assets are still deployed in activities protected by regulation.

If there is any doubt that utility companies have dramatically lower risk than the market in general, that doubt should disappear by looking at the performance of these stock price values in stressful times. There is no need to make any mean reversion in betas, no need to make leverage adjustments to betas, no need to compute any betas. Just look at the chart.

III. ANALYSTS' GROWTH RATES

Q. What is the nature of the problem you see with growth rate forecasts?

A. Projected growth rates are central to the DCF model. They also can figure in one of the difficult-to-measure factors in the CAPM, namely the expected market risk premium ("EMRP"). One of the lessons regulators should glean from the financial crisis is that overly optimistic growth rate forecasts that are not consistent with basic economic precepts cannot be part of the rate of return determination. A growth rate that logically cannot persist for an indefinite period is an invalid input to the estimation models. It is no longer valid (if it ever was) to assume that investors' "expectations" are so illogical and over-optimistic with respect to growth rate estimates – that is, that investors expect such "bubbles" to last forever.

Therefore, rather than using analyst growth rates that created recent bubbles, the Commission should critically examine growth rate inputs to assure that they are sustainable, and consistent with earnings at the level of the true cost of capital and capital

expenditures adequate to serve customer demand. The Commission cannot rely with confidence on earnings growth rate projections made by financial analysts who share the financial community's bias favoring higher utility earnings and whose forecasts have been demonstrably in error. As I discuss later, biases in estimated growth rates are identified in the academic literature, and empirical data show that forecast long-term growth rates have clearly been inconsistent with long-term economic growth.

Q. Why are growth rates such an important issue in cost of capital determination?

A. The DCF model is designed to estimate a solution for an equation for the value of a stock that is a function of cash flow growth and risk. We know the value of a stock, but we do not know either the risk or the cash flow growth. We need an estimate of the cash flow an investor will receive, which depends in part on the projected growth rate, to back out risk from the share value. Once we have an estimate of the cash flow, an implied discount rate (cost of equity) can be derived. The leverage adjustment that Mr. Moul makes to the DCF model is clearly unnecessary and illogical when one goes back to the basics of the underlying concept.

Q. What kind of earnings growth information do real investors look at in making investments?

A. Of course, nobody knows with certainty how any particular investor or all investors think. But typical valuations focus on earnings forecasts for one or two years, supplemented by the application of financial ratios like price-to-earnings (P/E) or an enterprise value to pre-tax operating cash flow (EV/EBITDA) multiple to the projections. The important point here is not the detailed valuation process used by investors, but that short term growth

forecasts tend to be of greatest importance. Analysts' 5-year earnings growth estimates, which are too often made central to cost of capital measurement in rate proceedings, are not crucial pieces of information to investors, and they most certainly do not drive the valuation of shares. In the current environment, more than ever, the focus is short-term -- when we will get out of the recession and how strong will the recovery be in the next couple of years. In sum, treating analysts' five-year projections as important financial data in the current financial environment is an idea that cannot be taken seriously. Even worse are analyses that extend such a five-year forecast over the infinite future period that begins with year six. For example, Mr. Moul advocates extending analyst growth rates infinitely. This can lead to absurd results, such as the situation where a firm is supposed to grow at a rate in excess of the overall GNP growth rate (over an infinite period.) As a matter of simple mathematics, such a firm would eventually become larger than the economy of which it is only a part. The Commission must reject critical model inputs that produce such absurd and impossible results.

Q. Was valuation driven by five-year earnings forecasts before the financial crisis?

A. No. One of the most well known writers in valuation is a professor named Aswath Damodaran of the Stern School of Business at New York University. In his text book on valuation he finds that any superiority of analyst forecasts deteriorates quickly as the forecast period is extended and that the fundamentals must always be considered.

The analyst forecasts outperform the time series model for one-quarter ahead and two-quarter ahead forecasts, do as well as the time series model for three-quarter ahead forecasts and do worse than the time series model for four-quarter ahead forecasts. Thus, the advantage gained by analysts from firm-specific information seems to deteriorate as the time horizon for forecasting is extended. There is an intuitive basis for arguing that analyst predictions of growth rates must be better than time-series or other

478 historical-data based models simply because they use more information.
479 The evidence indicates, however, that this superiority in forecasting is
480 surprisingly small for long-term forecasts and that past growth rates play a
481 significant role in determining analyst forecasts. . . . Analyst forecasts may
482 be useful in coming up with a predicted growth rate for a firm but there is a
483 danger to blindly following consensus forecasts. Analysts often make
484 significant errors in forecasting earnings, partly because they depend upon
485 the same data sources (which might have been erroneous or misleading) and
486 partly because they sometimes overlook significant shifts in the fundamental
487 characteristics of the firm. The secret to successful valuation often lies in
488 discovering inconsistencies between analysts' forecasts of growth and a
489 firm's fundamentals.²
490

491 **Q. Have you evaluated the growth rates for the sample of companies used by Mr. Moul**
492 **in his DCF analysis?**

493 A. Yes, Mr. Moul uses analysts' five-year forecasts in his constant growth DCF analysis. I
494 have evaluated this approach by using a simple computer program that retrieves five-year
495 growth rate forecasts from the yahoo.finance website, along with other information needed
496 for a DCF calculation. To highlight the problems with his approach, I have used the same
497 set of companies that Mr. Moul used in his sample, even though many of those firms gain a
498 significant share of their operating income from non-regulated activities such as natural gas
499 marketing (see the final column of Table 3 below). The program allows me to quickly
500 generate alternative DCF estimates using either the dividend yield or the P/E ratio. Table 3
501 shows the results of this analysis using two different ways to compute cost of capital with a
502 DCF approach. I present this table not to suggest that it gives an accurate estimate of the
503 cost of capital, but rather to illustrate the problems with applying five-year analyst growth
504 rates and the biases in Mr. Moul's sample.
505

² Damarodan on Valuation: Security Analysis for Investment and Corporate Finance, pp 165-166.

The first column of the table shows price-to-earnings ratios, the current price of the share (the table uses share prices from 26-May-2009) divided by the projected earnings per share. The second column lists the five-year growth rates published by finance.yahoo.com. The third column presents the return on equity that is implied by the earnings per share projection and the book value per share.

The two “Equity Cost” columns show the alternative cost of equity estimations. The column titled “Equity Cost of Capital from P/E Formula” uses a standard formula for the P/E ratio to derive the cost of equity capital. The column titled “Equity Cost of Capital from DCF model” shows the cost of equity from the typical dividend yield formula that adds the growth rate to the forward dividend yield (shown in the preceding column).

The final column lists for each firm in Mr. Moul’s sample the non-utility percentage of earnings, which I calculated from the financial reports of each company. These data indicate that more than half of the sample derives a large portion of earnings from unregulated activities. The sample is a distorted representation of the risk and cost of equity of a distribution company like Peoples Gas.

Table 3 - Cost of Capital Estimates from Using Analyst Growth Rates without Adjustment

Ticker	Company Name	PE Ratio From Yahoo or Forward EPS/Share Price	Prospective	Forward ROE from the Forward EPS and Book Value	Equity Cost of Capital from PE Formula	Forward Dividend Yield	Equity Cost of Capital from DCF Model	Non-Utility Percent
			Annual Growth Over Next 5 Years (Growth Page from Yahoo)					
AGL	AGL Resources	10.13	4.25%	12.42%	10.74%	5.94%	10.19%	44%
ATO	Atmos Energy Group	11.22	5.00%	9.04%	8.98%	5.40%	10.40%	5%
GAS	NICOR	11.25	4.30%	12.50%	10.13%	5.84%	10.14%	34%
LG	Laclede Group	12.64	3.50%	9.94%	8.62%	5.00%	8.50%	33%
NJR	New Jersey Resources	13.04	7.00%	13.75%	10.76%	3.73%	10.73%	42%
NWN	Northwest Natural Gas	14.79	4.75%	10.88%	8.56%	3.83%	8.58%	5%
PNY	Piedmont Natural Gas	13.95	7.00%	12.24%	10.07%	4.78%	11.78%	7%
SJI	South Jersey Industries	13.13	7.00%	13.50%	10.67%	3.44%	10.44%	45%
WGL	WGL Holdings	12.37	4.00%	10.28%	8.94%	4.95%	8.95%	5%

Companies with a higher percentage of non-utility operations tend to have a higher cost of capital. Indeed, if one makes a simple plot of non-utility earnings percentage and estimated cost of capital, the correlation is quite strong. Making a trend line with the percentage of non-utility operations and cost of equity capital would imply that a company with 100% utility operations has a cost of capital below 9%.

My main objective in presenting the analysis in Table 3 is to review the analyst growth rate estimates. Looking at just a couple of examples from the table illustrates the problem with simplistically applying analyst growth rates in this sort of analysis. Take the case of South Jersey Industries, which has the ticker symbol “SJI”. SJI owns gas distribution as well as some non-utility operations, including natural gas production and wholesale gas operations. Using the analyst growth rate estimate of 7% results in cost of equity estimates of 10.67% and 10.44%, respectively, for the two alternative calculation methods shown. The company’s earned return on equity is projected to be 13.5%. The key point about this growth rate is that for SJI to continue to grow at 7% the company would have to continue earning a return on equity of 13.5% (a level in excess of its cost of equity), and it would also have to experience a growth rate in demand and capital expenditures of 7%.³ Whether explicit or implicit, both these assumptions – that the high return on equity can be maintained and that growth in capital expenditures and demand will be 7% -- are unreasonable for the infinite period required by the DCF model. Similar unreasonable assumptions must be made for the other companies in the table with a high cost of capital.

³ How this works, and the related effect of the dividend payout ratio, is explained below).

546 **Q. Why is the forecast 7% growth rate not sustainable over an indefinite period, for a**
547 **local gas distribution company in particular?**

548 A. For regulated utility companies in Mr. Moul's sample group, earnings growth can come
549 from two sources: growth in assets; or growth in the return on assets. If earnings are not
550 needed to fund growth in assets, then income earned by the company can either be placed
551 in an investment account or paid out as dividends. Either way, the company cannot grow
552 quickly. On the other hand, if assets grow by 7% while the company continues to earn the
553 same rate of return (and pays out dividends at the same rate), then earnings will also grow
554 at 7%. The problem is that 7% is more than the expected overall rate of growth in nominal
555 GDP, and most certainly more than the long-term growth rate of natural gas distribution
556 plant. Over a long enough period, the company would take over the whole economy. SJI
557 management may want this to happen, but it obviously cannot. Before the financial crisis,
558 investors may have been willing to believe unrealistic growth rate estimates, accepting that
559 housing construction and other sectors of the economy could keep growing at rates much
560 higher than the overall economy. The recent financial crisis has confirmed that such
561 expectations were unreasonable.

562
563 **Q. Explain your remarks about the assumption implicit in some analyst growth rate**
564 **projections that utility companies can continue to earn returns above their cost of**
565 **capital.**

566 A. For non-regulated companies, the objective of management is to make investments only
567 where returns exceed the cost of capital. Therefore, the assumption that non-regulated
568 companies can earn returns above their cost of capital may not be an unreasonable
569 assumption, even on an indefinite basis. Managers of regulated utility companies have the

570 same objective -- to earn more than their cost of capital, but the whole idea of regulation is
571 to prevent this result and to set the utility's return at its cost of capital. When one assumes
572 that utility company returns can remain above the cost of capital for long periods of time,
573 one is necessarily asserting that regulators are incapable or unwilling to perform their jobs.
574 Returning to the example of SJI, if that company's returns fall from the level of 13.5%
575 even to Mr. Moul's 12% cost of capital estimate, then not only will the growth rate fall, it
576 will be negative. Before the financial crisis, investors may have not believed that negative
577 growth is possible. Investors have learned the hard way that growth can certainly be
578 negative and that assumptions that economic variables will remain at unsustainable levels
579 are dangerous.

580
581 **Q. You have cautioned against undue reliance on five-year analyst growth rates for use**
582 **in DCF models, but you have not suggested an alternative. Is there one?**

583 A. Yes, there are alternatives. The central mechanism of a DCF model is to estimate the cash
584 flow that will accrue to investors from owning stock and then discounting that stream of
585 money to ascertain its value today. It is simple to assume that cash flow accruing to
586 shareholders as dividends may grow at different rates at different points in time when
587 estimating the cash flow. This idea of applying two or more growth rates in a DCF
588 analysis is not new. The multi-stage approach is founded on two simple ideas -- that
589 returns above the cost of capital are not sustainable forever and that investment growth in
590 the long run is driven by demand growth in the industry.

591
592 I have developed (for illustrative purposes) a method to compute sustainable growth rates
593 that accounts for the long-term asset growth of distribution companies and the convergence

of returns to the cost of capital. This particular model has three stages, although it is certainly not the only multi-stage approach. In my model, the first stage uses near-term analyst estimates of returns and pay-out ratios. The second stage is a transition to long-term variables, and the third stage represents the stable period where growth in assets is at long term levels and where earned returns correspond to the cost of capital.

Q. How can you compute the cost of capital from the DCF model incorporating your observation that, in the long run, utilities do not earn more than their cost of capital?

A. The application of the model is changed. The only novel notion in my calculation is to create a mechanical technique for assuring (in the long-term portion of the model) that the long-term return on equity converges to the cost of capital. This poses a minor challenge because the cost of capital itself is not known until the process is completed. To make the approach work, an iterative technique can be developed. The iteration begins with entering an initial value for the cost of capital. If the cost of capital (which is equated to the long-term return on equity that in turn drives cash flow) results in a value that does not correspond to the current share price, then another value for the cost of capital value is used. This process, testing different cost of capital numbers, is continued until the value computed by discounting cash flows at the cost of capital equals the share price. Given that the procedures are a bit technical, I have included a further description of the method in Exhibit 1.3.

Q. What assumptions have you made for your illustrative calculations?

A. I have assumed that the real growth rate in capital expenditures corresponds to the long-term growth rate in residential and commercial natural gas demand projected by the

Energy Information Agency (EIA). (Each year, the EIA makes a twenty-year forecast that includes, among many other things, the demand for natural gas and the rate of inflation.) The long-term real growth in demand in the EIA forecast is expected to be about .6% while the inflation rate is expected to be 2%. The long-term growth rate is roughly the same 1% rate of growth that Value Line expects (see Value Line's Northwest Natural Gas report). For short-term returns and pay-out ratios, I have used the return on equity and dividend pay-out ratio projections made by Value Line (even though they are arguably optimistic.) I also have assumed that regulation remains imperfect, so that the return on equity does not completely converge to the cost of capital. Accordingly, I allow a 1% premium to be earned above the cost of capital.

Q. How do the results of this sustainable growth rate analysis compare to results using the assumption that analyst growth rates will persist indefinitely?

A. The differences are quite dramatic. Table 4 below shows that when long-term growth is consistent with expected demand growth and when the return on equity converges (even imperfectly) to the cost of capital, the estimated cost of capital is much lower. With a short-term period of four years and a transition period of 10 years, Table 4 shows that the median cost of equity is 8.4%. These requirements are not radical or unreasonable. One could even call them plain common sense. When logical, sustainable growth rates are used, they produce dramatically different – and lower -- estimates of the cost of capital than the inputs used in Mr. Moul's analysis.

Table 4 - Cost of Capital with Long-term Sustainable Growth																		
Short-term Period				4 Years			Transition			10 Yrs		Cost of Equity						
Long-term Investment Growth				1%			Inflation Rate			2%			Growth	Growth	Growth			
										Adder to Cost of			h Rate -	Rate - 10	Rate - 15	Rate - 20	Long-term	Long-term
Stock Price	Book Value	ROE 2009	ROE 2010	ROE 2011	DPO 2009	DPO 2010	DPO 2011	Equity		5 Years	Years		Years	Years	Growth	Payout		
AGL	28.96	21.48	12.5%	13.0%	14.5%	64.0%	62.0%	59.0%	1.0%	1.00	9.7%	6.0%	3.9%	3.1%	3.0%	3.0%	68.0%	
ATO	24.46	22.60	9.0%	8.5%	9.5%	62.0%	62.0%	56.0%	1.0%	2.00	9.3%	3.9%	4.9%	4.7%	4.2%	3.0%	70.7%	
GAS	31.85	21.55	11.0%	12.5%	12.0%	74.0%	64.0%	56.0%	1.0%	3.00	8.4%	0.8%	2.2%	2.5%	2.6%	3.0%	67.9%	
LG	30.83	22.12	12.5%	10.5%	11.0%	53.0%	60.0%	55.0%	1.0%	4.00	8.5%	3.3%	4.0%	3.9%	3.7%	3.0%	68.3%	
NJR	33.24	17.28	13.5%	13.0%	11.0%	50.0%	47.0%	49.0%	1.0%	5.00	7.3%	1.8%	3.8%	4.0%	3.9%	3.0%	63.8%	
NWN	41.26	23.70	11.0%	11.2%	11.0%	57.0%	58.0%	58.0%	1.0%	6.00	7.5%	4.8%	4.2%	3.9%	3.7%	3.0%	64.4%	
PNY	22.60	12.11	12.5%	13.5%	13.5%	67.0%	62.0%	57.0%	1.0%	7.00	7.7%	2.8%	2.5%	2.4%	2.6%	3.0%	65.1%	
SJI	34.61	17.33	13.5%	13.5%	14.5%	49.0%	50.0%	50.0%	1.0%	8.00	7.7%	8.4%	6.0%	4.9%	4.5%	3.0%	65.3%	
WGL	29.68	20.99	12.0%	11.5%	11.0%	57.0%	57.0%	58.0%	1.0%	9.00	8.4%	3.3%	3.7%	3.5%	3.4%	3.0%	68.0%	

640 AGL 28.96 21.48 12.5% 13.0% 14.5% 64.0% 62.0% 59.0% 1.0% 8.4%

641 **IV. USING BOND VALUES TO MEASURE COST OF EQUITY**

642 **Q. It appears that the credit spread between bonds and treasury bills, a measure**
643 **sometimes used in regulatory cost of equity determinations, has increased during the**
644 **financial crisis. Does this necessarily mean that the cost of equity has increased in a**
645 **corresponding manner?**

646 **A.** No. One of the methods Mr. Moul uses to compute People Gas' cost of equity is to add a
647 premium on top of the yields of A-rated utility bonds. This analysis essentially sums two
648 different premiums to measure the risk of Peoples Gas stock. The first is the premium of
649 A-rated bonds over government bonds, which I call the credit spread. The second is the
650 premium of the cost of equity over A-rated bonds, which supposedly compensates for the
651 assumed risk of equity above bonds. However, the addition of these two premiums does
652 not yield a valid measure risk of common equity in the today's financial markets -- for at
653 least a couple of reasons.

654 - First, in the current market environment, the spread of utility versus government
655 bonds reflects something more than the probability of default, which is the classic
656 driver of bond spreads. There are various possible explanations for the aberration

in credit spreads that are not driven by fundamental risk factors. Reasons the yield spreads have been so high during the current credit crisis include lack of liquidity in debt markets, lack of trust in bond ratings, and changes in the pricing of the call features of non-government bonds.

- Second, since debt has a priority over equity in bankruptcy, it is natural to think that debt is always less risky than equity and that the cost of equity will be higher than the cost of debt. However, because there is less inflation risk for equity than for debt and because the tax rate is lower for dividends than for interest income, the cost of debt is not necessarily always lower than the cost of equity. This is particularly true in the current financial environment, where monetary and fiscal policies have created investor uncertainty with respect to the future rate of inflation.

Given the anomalous increase of credit spreads in the current market environment, and the uncertainty about the future rate of inflation, the Commission should not set rates using an anomaly in the financial markets data without examining its causes and whether it actually affects the cost of equity for Peoples gas.

Q. What is the relationship between credit spreads and risk?

A. In theory, the minimum credit spread that a lender is willing to accept for a loan such as an A-rated utility bond is related to the potential that he may lose money if a risky debt falls into default. If a default occurs, then the lender will lose some, or even all, of the amount of money he invested in the bond. To compensate for this possibility of default, credit spreads give investors a higher return in scenarios where debt is repaid. To see how credit spread relates to the probability of default, one can think of two possibilities. In the first

case the debt is not repaid – the possibility of this happening is called the probability of default. In the second case, the loan is repaid and the investor receives more than a risk free return due to the credit spread. When cash flow from the two possibilities is added up and weighted by probabilities, the expected return for investors in risky debt should be equal to or greater than the return on the risk free security. A simple formula to represent credit spreads is that the credit spread equals the probability of default multiplied by the percentage loss that occurs if a default has happens (called the loss given default or LGD). The percentage probability of default multiplied by the percentage LGD yields the minimum credit spread.

Q. In the current market, do the fundamental risk factors of default probability and loss given default explain observed credit spreads?

A. No. To explain the dramatic increase in credit spreads on A-rated bonds, from about 1% to 3%, one would have to believe that one (or both) of the probability of default and the loss given default has dramatically increased. For a company such as Peoples Gas, which has significant regulatory protections ranging from revenue decoupling to the ability to request rate increases, the supposition that default risk has increased is not a plausible explanation for the increased credit spreads. Instead, the spreads have increased as a result of the credit crisis which has made it more difficult for corporations to raise money in all sorts of debt markets. This feature of current markets does not affect People Gas unless it is going into the debt markets to raise capital. Another likely cause for the increased credit spreads is the recent performance of credit rating agencies, whose dramatic errors in gauging the risk of bonds were exposed in the financial crisis. Just one of very many examples is the case

of Lehman Brothers. When the bonds of Lehman Brothers have a rating of “A” just before the company went bankrupt, how can investors trust the entire rating system?

Q. To the extent that credit spreads are driven by factors other than default risk, does an increase in spreads mean that the cost of equity used for setting rates has increased?

A. No. The utility’s risk and the minimum required return for an equity investor are driven by fundamentals like the volatility of cash flows and what happens to cash flows in adverse circumstances like the financial crisis. The cost of equity for Peoples Gas does not automatically increase just because Moody’s cannot rate bonds correctly or banks stop lending to one another. The fundamental factors affecting Peoples Gas’ risk level have not changed as a direct result. This means the higher cost of capital numbers that pop out of analyses that incorporate credit spreads, like the risk premium approach, are not justified for ratemaking. Indeed, the graphs displayed above for company-by-company stock price movements illustrate that utility stocks on a comparative basis can become more attractive to investors in the same circumstances that have produced increased credit spreads, implying a lower, not higher, equity cost.

Q. Given the high credit spreads in current crisis markets, is it possible that the yields on debt approach the cost of equity?

A. Yes, this is theoretically possible for a variety of reasons; the cost of debt could even exceed the cost of equity. The first reason is that an investment in the equity of a utility company has less inflation risk than an investment in a long-term bond. If one invests in a bond and the inflation rate increases, then the cash flow received on the bond in real terms has diminished. For example, if the yield on a long-term government bond is 3% and the

inflation rate turns out to be 6%, then the investor has lost a lot of money, in real terms. On the other hand, the inflation risk is less when investing in a utility share, since the company can ask for rate increases to cover both increased operating expenses and the higher inflation component of the rate of return on equity.

This inflation risk is relatively more important now because there is little risk left in utility companies, like Peoples Gas, with high equity ratios and de-coupling or other revenue protection mechanisms. The inflation risk of a bond may well be higher than the residual risks left in utility shares. The inflation risk is also important because there is a general fear of inflation arising from monetary and fiscal policies implemented to combat the recession. If an investor is worried about increasing inflation, he could elect to invest in a utility share rather than in a utility bond.

Q. Earlier you mentioned certain tax differences for bond and equity investments. Have changes in the tax code affected the relative costs of debt and equity capital?

A. Yes. Differences in the tax treatment of interest and dividend income can make the pre-tax cost of equity less than the pre-tax cost of debt. As the tax rate on dividends and capital gains has been reduced with the Bush tax cuts, there is a relative advantage of owning equity versus debt. Since investors are concerned about the after-tax rather than pre-tax yields on their investment, the pre-tax cost of capital (what investors require to invest) has been lowered. To confirm the perceived importance of dividend tax rates to investors, one has to look no further than one of the first items that pops up on NICOR's website:

Nicor is proud to sponsor Defend My Dividend, a national grassroots advocacy campaign that gives utility investors a powerful and

unified voice with a single mission: to make permanent the current 15 percent dividend tax rate beyond 2010. The campaign is also sponsored by various associations, organizations and companies, with the support of their members, employees, retirees and shareholders. For more information, visit www.DefendMyDividend.org

Q. What are the ratemaking implications of unusual credit spreads, changes in tax rates, and investor concerns about inflation?

A. In setting rates, the Commission regularly makes adjustments to normalize for events that will most probably not recur. For example, before Peoples Gas' de-coupling mechanism was put in place, if the weather was very cold, the Commission might make a weather normalization adjustment that accounted for the fact that atypical weather probably would not recur over the period the rates set are in place. The atypical credit spreads in today's bond markets are not fundamentally different from weather normalization adjustments. Although the Commission must recognize and take account of the circumstances and the lessons of the financial crisis, the Commission should not set rates using highly unusual credit spreads that will likely not persist over the tenure of the actual rates (and possibly not through the future test year).

V. CHECKING THE FUNDAMENTALS

Q. In an earlier response, you emphasized post-analysis checks of cost of equity estimates. Why are such checks important?

A. Coming up with a fair rate of return involves measuring risk – something that is never easy. This task is made more difficult in current financial markets where absolute and relative valuations of debt and equity have been very volatile. Given these measurement difficulties, relying entirely on models that incorporate dubious estimates of long-term

growth rates, market risk premiums driven by psychology, noisy credit spread data, and beta statistics that can be manipulated is not a prudent course. The Commission (and its Staff) must search for ways to check the validity of the numbers that drop out of cost of equity estimation models. In my opinion, finding relatively simple ways to check valuation model results is a very important part of the process. By using the word simple, I do not suggest the process is easy, only that the checks should reflect fundamental financial principles and common sense. Today's technology makes it very easy to compute a quarterly three-stage DCF model or to calculate betas with mean reversion from historic data. Coming up with effective ways to see if your results are reasonable requires more important skills, including the ability to admit that model calculations can be wrong. When the simple analyses deviate from the results of more detailed models, one should generally check the inputs and logic of the complex models rather than asserting that a check using fundamental relationships and principles is less worthy.

Q. What are the characteristics of checks that rely on fundamentals?

A. Such verification checks of cost of capital models should not require problematic estimates like growth rates or the market risk premium that can produce questionable model results. Further, the checks should not be a test of blind conformity. The whole idea of a check is to assure that results make sense, and do not simply follow the herd or conventional wisdom. Some numbers or explanatory theories can take on a life of their own in financial markets, despite clear contradictions with common sense and basic financial principles. For a time, there was a belief that U.S. housing prices could never fall. It persisted, even though prices had doubled in a few years and were far above marginal costs of building materials and labor inputs. Similarly, oil prices of \$145 per barrel were explained as the

804 result of supply and demand, even as demand eased and the cost of extracting oil from
805 alternative sources remained below market prices. The consequences of ignoring common
806 sense and basic finance in favor of these tenets of conventional wisdom contributed to the
807 financial crisis. These two stories are examples of the same herd mentality that can lead
808 regulators to mimic the rates of return set by other regulators. All that such a conformity
809 check means is that mistakes made by others are being copied. Verification checks should
810 instead rely on and be consistent with fundamental economic principles.

811
812 **Q. What are some examples of common sense cost of capital checks that do not require**
813 **problematic estimates or following the herd?**

814 A. One easy validation technique is to substitute financial inputs from real business
815 transactions rather than theoretical and regulatory data sources. Such potential inputs
816 include actual cost of capital figures used by investors in merger analyses, return
817 projections used in establishing pension plan reserves, discount rates applied by investment
818 analysts in discounted cash flow and market to book analyses. Previous attempts to apply
819 such checks in proceedings before this Commission were dismissed as inconsistent with
820 estimation model results or recent regulatory awards. The financial crisis requires that such
821 simple verification checks be revisited, as it is more difficult to pull out meaningful
822 measures of risk from current stock price and bond price information.

823
824 **Q. Is the information you suggest using readily available?**

825 A. With the decline in mergers and other financial transactions after the financial crisis, less of
826 such information is available. As an alternative, I suggest the Commission revisit the use
827 of the market capitalization of a company relative to its invested capital. Much of the

necessary data can be obtained from regulated accounting reports. One of the few things that can be demonstrated in working with financial ratios is that when the market-to-book ratio is equal to one, the earned return on equity is equal to the cost of equity. Through clever selection of sample companies, or the use of unsustainable earnings growth rates, DCF results are susceptible to easy manipulation. Similar tactics can skew the equity risk premium in the CAPM to produce a higher or lower cost of equity estimate. The basic equality test of the market-to-book ratio is not subject to such manipulation, and it is far simpler.

Before the financial crisis the majority of non-regulated companies had market to book ratios far in excess of one. This was not a surprising result, as companies had made investments that yielded high rates of return that exceed the cost of capital. Remember that making investments that exceed the cost of capital is the entire objective of a company, and companies that can find more investments that earn as much as possible above their cost of capital earn the highest return on capital. Utility companies are naturally envious of non-regulated companies when times are good and suggest that the market-to-book ratio is somehow not relevant or should naturally be above one. Now, market capitalization is often not above book value for non-regulated companies, and no one wants to replicate their market-to-book ratios. For example, the market value of Citigroup shares is \$3.3 while the book value is \$13. A GE share's book value is about \$10, and at the trough of the market its share value was \$5.57. The market does not attribute full value to a balance sheet that contains "toxic" assets. But, if the toxic assets could be appropriately valued, the market-to-book ratio of unity could be used to derive an approximate equity valuation.

852 **Q. Are you not simply resurrecting an argument to set the rate of return using a**
853 **market-to-book ratio regression that was previously disputed by Staff and rejected by**
854 **the Commission?**

855 A. Not precisely. First of all, I am recommending that the Commission take a look at the
856 market-to-book ratio to check its determination using other tools, not as the primary basis
857 to compute the cost of capital. Second, I am not suggesting that an analysis of
858 market-to-book ratios gives one a perfect estimate of the cost of capital. I realize the return
859 on equity may not be stable and that items such as Accumulated Other Comprehensive
860 Income can mean that the invested capital deviates from the equity capital recorded on a
861 company's books. However, for the companies in Mr. Moul's sample, Accumulated Other
862 Comprehensive Income is not a major item and the companies have not recorded large
863 plant write-offs.

864
865 Finally, the method must be evaluated on a relative rather than an absolute basis. In this
866 instance, the French proverb "*le mieux est l'ennemi du bien*" –better is the enemy of good -
867 - is apropos. No method is perfect, and relative to other estimation approaches, examination
868 of market-to-book ratios has improved, making it well suited for use as a check on models
869 challenged by current circumstances. The financial crisis has shown us that traditional
870 valuation approaches have dramatic flaws, as evidenced by the volatility in market values.

871
872 From a statistical perspective, information provided by a market-to-book analysis is more
873 meaningful than it was before the financial crisis. Before the crisis, virtually every
874 company in a sample like that used by Mr. Moul would have market values far in excess of
875 book values. In such circumstances, estimation of the cost of capital from a

market-to-book ratio of one involved extrapolating outside the range of data. Now, some companies have ratios near unity, meaning defining the relationship between cost of capital and the market-to-book ratio does not involve values that are outside of the sample of companies.

Q. Explain the data and method that you used to compute a check of the cost of capital?

A. I gathered data on the market-to-book ratios of utility companies and also the forward earned return on equity for each company, using the prospective return on equity. Then I graphed the return on equity against the market-to-book ratio in a scatter plot. With this graph one can draw a line that relates the cost of capital to the market-to-book ratio. The point at which the line crosses a market-to-book ratio of one yields the return on equity consistent with a company earning a fair return on its investment -- one that does not allow it to extract an excessive return from its ratepayers or prevent it from being able to recoup its investment and cost of capital. I have made this graph using Mr. Moul's gas distribution sample, as well as the group of companies that Mr. Moul lists as Standard and Poor's Public Utilities. (The latter group includes companies such as Exelon and Constellation Energy that sell electricity on a non-regulated basis.) To establish the trend line, I assumed it crosses the origin, meaning if there is no profit then there is no market value. When estimating the cost of capital in this way, there are no growth rates, no betas, no equity market risk premiums, and no credit spreads.

Q. What are the results of your market-to-book verification analysis?

A. This analysis, which is not intended to produce exact numbers, but rather serve as a reasonableness check, demonstrates that Peoples Gas' cost of equity should be between 8%

and 9%. The first graph uses the sample of gas distribution utilities that was the basis for Mr. Moul's presentation. Even though many of his sample companies have significant non-utility operations, when one goes to the y-axis where the market-to-book ratio is one and then traces the return on equity, the number is 8%.

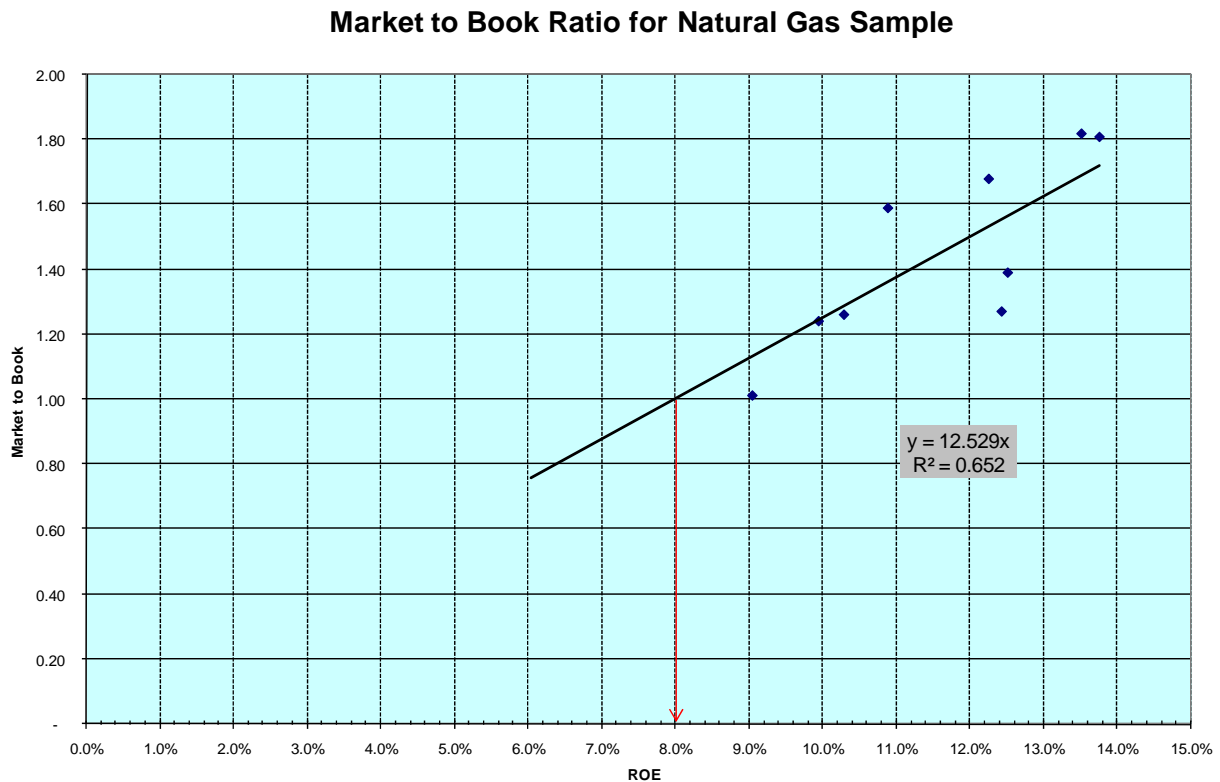
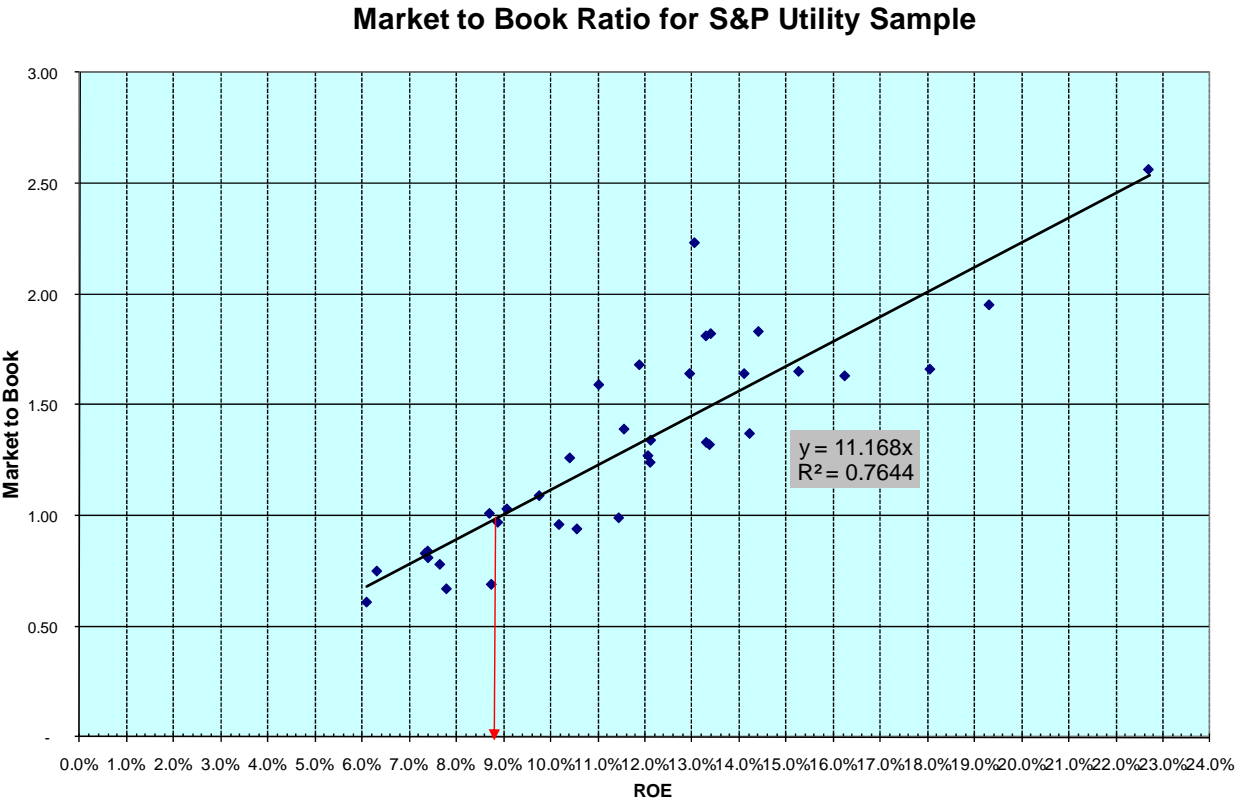


Figure 6

The second graph shows a similar analysis with all of the companies in the Standard and Poor's Public Utilities list. The advantage of the larger sample is that it provides more data for the statistical analysis. The disadvantage is that the sample includes companies that have a higher cost of capital than purely regulated companies. This analysis, which

912 suggests a cost of equity of less than 9%, provides a high-end estimate of the cost of
913 capital, as the sample has riskier companies.



914
915 **Figure 7**
916

917 **Q. Does this conclude your direct testimony?**

918 **A. Yes.**